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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,515	06/12/2001	Billy W. Colston	IL-10715	5330

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EXAMINER	
TRAN, MY CHAU T	
ART UNIT	**PAPER NUMBER**
1639	10

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/880,515	COLSTON ET AL.	
	Examiner	Art Unit	
	My-Chau T. Tran	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/02/02* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 36-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 36-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's amendment filed 10/02/02 in Paper No. 9 is acknowledged and entered. Claims 10-35 are canceled. Claims 1, 3-5, 8, and 9 are amended. Claims 36-43 are added. Claims 1-9 and 36-43 are pending.

Withdrawn Rejections

2. The previous rejections under 35 USC 112, second paragraph for claims 1-9 have been withdrawn in view of applicant's amendment of Claims 1, 3-5, 8, and 9. The drawing objections have been withdrawn in view of applicant's amendment of the specification and argument.

3. All rejections are maintained and new rejections necessitated by the amendment of the newly added claims 36-43 are set forth below with response to arguments.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Maintained Rejections

5. Claims 1-3, 5-7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyle et al. (US Patent 5,821,066).

Pyle et al. teach a method for the detection of microorganisms (col. 6, lines 48-50). The method steps are mixing the immunomagnetic beads that has bound antibody which specifically binds to the target bacteria with the liquid sample, placing the sample mixture in a magnetic

separator to separate the beads from the liquid sample, washing the beads with a solution which removes loosely bound bacteria and other particles, and treating the bacteria that is conjugated to the beads with a specific fluorescent conjugated antibody, and mounting the sample for examination by epifluorescent microcopy (col. 12, lines 42-68; fig. 2). The sample is mounted by way of trapping the beads on a filter membrane and optically read (col. 14, lines 4-20). The method would also be use for detection of pathogenic bacterium (col. 16, lines 54-55). The beads are contained in a tube (curvet), which is mounted for examination by epifluorescent microcopy (fig. 2; col. 17, lines 59-62; col. 18, lines 11-12). The method step of mounting the membrane for examination by epifluorescent microcopy in which suitable light filter system is used to excite fluorescent labeled in order to detect the present of the target microorganism (col. 10, lines 9-15). This would then provide the array pattern on such a membrane. The magnetic beads are obtained commercially, thus are package in a bead pack (col. 14, lines 1-3).

Pyle et al. does not expressly disclose that the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method steps of Pyle et al. by having the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate. Because the order of the method steps would not change the result of the complex for detection that is a bead that has bound antibody which specifically binds to the target, which is then bound to a labeled antibody. Further, one

having ordinary skill in the art would have been motivated to do this for the advantage of also washing off any unbound fluorescent labeled antibodies.

6. Claims 1, 4-6, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall (US Patent 5,236,826) in view of Okusa et al. (US Patent 4,952,520).

Marshall teaches a method for the detection of an analyte (col. 3, lines 19-45; col. 7, lines 23-45). The method steps are mixing the analyte with the particle-bound binding component and allowing them to react, adding a second binding component labeled with a signal-generating material to form an immunocomplex of particle-bound binding component:analyte:labeled binding component, separating the immunocomplex from the reaction mixture by a filtration procedure in which the filter material (substrate) retained the particle because of its size in the filter interstices (col. 7, lines 30-34), the complex is then washed to remove unbound labeled binding component, and the reaction area is read to measure the amount of signal present. The analyte includes parasitic antigen (col. 6, lines 65-68). The particle includes bead (col. 4, lines 12-20). The label must be capable of emitting a signal such as fluorescent (col. 7, lines 7-22). Where enzymes labeling is use to produce a readable signal by a photometer with monochromatic light, by scanning the spectrum the instrument could distinguish the different wavelength signal (col. 8, lines 62-68), which would then provide the array pattern.

Marshall does not expressly disclose that the filter material (substrate) is on a dipstick.

Okusa teaches an immunoassay in which the colored latex particle are capture on a membrane that is attached to a test device (dipstick) (col. 2, lines 11-17; col. 4, lines 9-23; fig. 1 and 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the membrane in Marshall with the membrane attached to a dipstick taught by Okusa because both Marshall and Okusa teaches the method of capturing the analyte bound particle by filtration. The membrane system of Okusa would provide a compact bioanalytical filtering system to be use in an environment other than the laboratory.

New Rejections – Necessitated by Amendment (Newly Added Claims)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyle et al. (US Patent 5,821,066).

Pyle et al. teach a method for the detection of microorganisms (col. 6, lines 48-50). The method steps are mixing the immunomagnetic beads that has bound antibody which specifically binds to the target bacteria with the liquid sample, placing the sample mixture in a magnetic separator to separate the beads from the liquid sample, washing the beads with a solution which removes loosely bound bacteria and other particles, and treating the bacteria that is conjugated to the beads with a specific fluorescent conjugated antibody, and mounting the sample for examination by epifluorescent microcopy (col. 12, lines 42-68; fig. 2). The sample is mounted by way of trapping the beads on a filter membrane (disposable capture substrate) and optically read (inserting the substrate into an optical detection system) (col. 14, lines 4-20). The method would also be use for detection of pathogenic bacterium (col. 16, lines 54-55). The beads are contained in a tube (curvet), which is mounted for examination by epifluorescent microcopy (fig. 2; col. 17, lines 59-62; col. 18, lines 11-12). The method step of mounting the membrane for examination by epifluorescent microcopy in which suitable light filter system is used to excite fluorescent labeled in order to detect the present of the target microorganism (col. 10, lines 9-15). This would then provide the array pattern on such a membrane. The magnetic beads are obtained commercially, thus are package in a bead pack (col. 14, lines 1-3). In another embodiment in which immunomagnetic beads (charged microbeads) are use in the immunoassay, the beads are separated from the liquid suspension by a magnetic separator (attaching the microbeads is carried out in an ordered array or disordered array) (fig. 2; col. 17, lines 59-62).

Pyle et al. does not expressly disclose that the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method steps of Pyle et al. by having the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate. Because the order of the method steps would not change the result of the complex for detection that is a bead that has bound antibody which specifically binds to the target, which is then bound to a labeled antibody. Further, one having ordinary skill in the art would have been motivated to do this for the advantage of also washing off any unbound fluorescent labeled antibodies.

10. Claims 1 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyle et al. (US Patent 5,821,066) in view of Wang et al. (US Patent 5,922,617).

The immunoassay methods of Pyle et al. are applied for the reasons discussed above.

Pyle et al. does not expressly disclose that the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate. Further, Pyle et al. also did not expressly disclosed a substrate with a plurality channels or magnetic capture pads.

Wang et al. teach the immunoassay methods for screening a large number of events (col. 2, lines 49-59). The method include magnetic beads with a magnetic or magnetizable substrate (col. 5, lines 60-61). In figure 2 B, the substrate have channels with beveled openings (wells) into which particles can rest (capture) (col. 13, lines 44-46; figure 2 B; col. 14, lines 35-59). The magnetic particles can also be held the openings of the substrate (col. 13, lines 65-67 to col. 14, line 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method steps of Pyle et al. by having the method step of adding the fluorescent labeled antibodies for attachment to the bead bound sample occurs before the method step of attaching the beads to a substrate. Because the order of the method steps would not change the result of the complex for detection that is a bead that has bound antibody which specifically binds to the target, which is then bound to a labeled antibody. Further, one having ordinary skill in the art would have been motivated to do this for the advantage of also washing off any unbound fluorescent labeled antibodies.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a substrate with a plurality channels or magnetic capture pads as taught by Wang et al. for the method of Pyle et al. One of ordinary skill in the art would have been motivated to provide a substrate with a plurality channels or magnetic capture pads for the method of Pyle et al. for the advantage of providing a rapid screening method for a large number of sample (Wang: col. 2, lines 49-50). Since both Pyle et al. and Wang et al. disclose an immunoassay method using magnetic bead (Pyle: col. 17, lines 53-55; Wang: col. 6, lines 63-67).

11. Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall (US Patent 5,236,826) in view of Okusa et al. (US Patent 4,952,520).

Marshall teaches a method for the detection of an analyte (col. 3, lines 19-45; col. 7, lines 23-45). The method steps are mixing the analyte with the particle-bound binding component and allowing them to react, adding a second binding component labeled with a signal-generating

material to form an immunocomplex of particle-bound binding component:analyte:labeled binding component, separating the immunocomplex from the reaction mixture by a filtration procedure in which the filter material (substrate) retained the particle because of its size in the filter interstices (col. 7, lines 30-34), the complex is then washed to remove unbound labeled binding component, and the reaction area is read to measure the amount of signal present. The analyte includes parasitic antigen (col. 6, lines 65-68). The particle includes bead (col. 4, lines 12-20). The label must be capable of emitting a signal such as fluorescent (col. 7, lines 7-22). Where enzymes labeling is use to produce a readable signal by a photometer with monochromatic light, by scanning the spectrum the instrument could distinguish the different wavelength signal (col. 8, lines 62-68), which would then provide the array pattern.

Marshall does not expressly disclose that the filter material (substrate) is on a dipstick.

Okusa teaches an immunoassay in which the colored latex particle are capture on a membrane that is attached to a test device (dipstick) (col. 2, lines 11-17; col. 4, lines 9-23; fig. 1 and 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the membrane in Marshall with the membrane attached to a dipstick taught by Okusa because both Marshall and Okusa teaches the method of capturing the analyte bound particle by filtration. The membrane system of Okusa would provide a compact bioanalytical filtering system to be use in an environment other than the laboratory.

Response to Arguments

12. Applicant's arguments filed 10/02/02 have been fully considered but they are not persuasive. Applicant argument for the rejection under 35 USC 103(a) as being unpatentable over Pyle et al. (US Patent 5,821,066).

Applicant alleges that Pyle et al. does not suggest or teach the presently claimed feature of "attaching the microbeads to a disposable capture substrate" and " inserting the substrate into an optical detection system".

It is the examiner position that Pyle et al. does teach the presently claimed feature of the invention. Pyle et al. teach that the sample is mounted by way of trapping the beads on a filter membrane (attaching the microbeads to a disposable capture substrate) and optically read (col. 14, lines 4-20). The beads are contained in a tube (curvet), which is mounted for examination by epifluorescent microcopy (inserting the substrate into an optical detection system) (fig. 2; col. 17, lines 59-62; col. 18, lines 11-12). Further, because applicant did not set forth any reason as to why Pyle et al. is nonobvious over the presently claimed invention. Therefore, the rejection is maintained.

13. Applicant's arguments filed 10/02/02 have been fully considered but they are not persuasive. Applicant argument for the rejection under 35 USC 103(a) as being unpatentable over Marshall (US Patent 5,236,826) in view of Okusa et al. (US Patent 4,952,520).

Applicant alleges that Marshall and Okusa et al. does not suggest or teach the presently claimed feature of "attaching the microbeads to a disposable capture substrate" and " inserting the substrate into an optical detection system".

14. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999.

The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
December 12, 2002

PADMASHRI PONNALURI
PRIMARY EXAMINER